

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

- ☐ Coloured covers/
Couverture de couleur
- ☐ Covers damaged/
Couverture endommagée
- ☐ Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- ☐ Cover title missing/
Le titre de couverture manque
- ☐ Coloured maps/
Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- ☐ Bound with other material/
Relié avec d'autres documents
- ☐ Tight binding may cause shadows or distortion
along interior margin/
Le reliure serrée peut causer de l'ombre ou de la
distortion le long de la marge intérieure
- ☐ Blank leaves added during restoration may
appear within the text. Whenever possible, these
have been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.
- ☐ Additional comments:/
Commentaires supplémentaires:

L'institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- ☐ Coloured pages/
Pages de couleur
- ☐ Pages damaged/
Pages endommagées
- ☐ Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- ☒ Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- ☐ Pages detached/
Pages détachées
- ☒ Showthrough/
Transparence
- ☐ Quality of print varies/
Qualité inégale de l'impression
- ☐ Includes supplementary material/
Comprend du matériel supplémentaire
- ☐ Only edition available/
Seule édition disponible
- ☐ Pages wholly or partially obscured by errata
slips, tissues, etc., have been refilmed to
ensure the best possible image/
Les pages totalement ou partiellement
obscurcies par un feuillet d'errata, une pelure,
etc., ont été filmées à nouveau de façon à
obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
☐	☐	☐	☒	☐	☐
12X	16X	20X	24X	28X	32X

C

P

THE
GOLD FIELDS OF CANADA :

A PAPER READ BEFORE THE

Literary and Historical Society of Quebec,

18TH NOVEMBER, 1863,

BY REV. JAMES DOUGLAS.



QUEBEC:
PRINTED BY HUNTER, ROSE & CO., ST. URSULE STREET.
1863.

T

no
b
n
w
g
e
ti
a
b
o
t
it
e
a
d
e
g
t
t
s
s
d
i
L
v
L

THE GOLD FIELDS OF CANADA.

THE first discovery of gold in Canada was made by a woman, near the mouth of the river Touffe de Pins, or Gilbert, a tributary of the Chaudière, some forty years ago, but it attracted no attention. In 1834, another woman, taking a horse to water near the same spot, perceived, as she supposed, a stone glittering in the bed of the river, and thinking it curious enough to preserve, took it home with her. It was not however till the following year that she became aware of its value. Shortly afterwards the discovery was made public in *Silliman's Journal*, by General Baddeley, then a lieutenant of the Engineers, and one of the most active promoters of our society. He stated that the piece lately found weighed 10.63 grs. He was not aware that it had been chopped off a nugget, the remainder of which weighed 1056 grs. His information was, therefore, not calculated to arouse any other than scientific excitement. So little interest, indeed, did the discovery occasion, that no mention of the important event is made in either of the cotemporary newspapers. Had gold mining, however, been then understood as it has been since the discoveries in California and Australia have revolutionized the system of working, and abolished the old and cumbrous method, some excitement might possibly have arisen, and the mineral resources of our country have been developed long ago. As it was, the discovery was again almost totally forgotten, the only person, seemingly, who took any interest in it being the Seigneur, M. DeLéry.

One of the earliest reports of the Geological Survey, that of 1847-48, contains a long description of the geological formation which extends throughout the auriferous region of Canada, and points out its resemblance to the geological features of those

other regions, upon this and other continents, where gold has been discovered, but especially its intimate relation to those parts of Vermont and the Southern States, whose rocks and alluvial deposits are auriferous. And almost every subsequent report, up to 1853, contains further information on the geological and mineralogical characteristics of our gold fields—information so minute and correct, that nothing of importance has been added to our knowledge of the subject from other quarters.

Curiously enough, at this very time gold was found to exist in minute quantities in a vein on the 17th lot of the 7th range of Ascot, near Sherbrooke, thereby, at this early stage, exhibiting the wide range of the auriferous field.

Exploration was now carried on vigorously on the Chaudière and its tributaries, and it soon appeared that the main river and all its tributaries, great and small, from Ste. Marie almost up to Lake Megantic, were, more or less, charged with gold. Owing to the sluggishness of the main stream up to its junction with the Du Loup, that is, over at least twenty miles of its auriferous bed, nothing more than prospecting has been done upon it, except at one or two spots where it has laid bare the ledge, as at the Devil's Rapids. There a highly remunerative quantity of large gold has been found. But, while all its tributaries were discovered to be auriferous, it was found that, at least below the bend of the river, at the mouth of the Du Loup, the streams which flowed in from the west were poorer than those which drained the ridge on its east bank. These are the Guillaume, the Des Plantes, the Touffe de Pins, and the Famine, with a number of insignificant rivulets. Where the Chaudière and the Du Loup join, they are streams of about equal bulk. Here the Chaudière takes a bend and runs almost due north and south, while the Du Loup flows in from the south-east. The current of the Chaudière becomes now much more rapid, and at two spots, at the Greater and Lesser Falls, both within two miles of the junction, the ledge is exposed for a considerable distance. At both these spots gold was early found jammed in the crevices of the slate. More recently, the streams above this point,

especially the Stafford Brook on the right bank and the Condé on the left, have been successfully washed for gold. The same result has attended the exploration of the Du Loup and its tributaries, up the boundary line of the State of Maine.

In 1846, M. DeLéry obtained a patent from the Crown, giving him the exclusive right forever to work for gold within the limits of his seigniory. The conditions of the patent are : " That our said grantees, their heirs and assigns forever, shall strictly conform to all laws and usages in force, and applying in that behalf, that they shall well and truly repay to other our loving subjects such damages and compensations as may from time to time accrue in consequence of the ground occupied, the opening of roads, and other like causes from the operations in working the said mines. And also, upon the condition that before working the same, they do transmit and deposit with our Secretary of our said Province a true and correct statement of the nature, situation and extent of the said ores, minerals and mines. And further, upon condition of transmitting, in each and every year, to our Receiver General for our said Province, a true and correct account of the gross product of the same, in such form and manner as our heirs and successors may be pleased to direct ; and also, upon condition of well and truly paying and delivering, in each and every year, from the time of melting the said ores for the first time in working furnaces, unto our Receiver General, or such other person as may have authority from us, our heirs and successors, one-tenth part of the whole gross product of the said ores, minerals, and substances thereunto appertaining whatever ; the said one-tenth part being melted, cast and prepared in the same manner as the like may be for the behoof of our said grantees, and refined according to the laws of France, as confirmed by the Edict of His Most Christian Majesty of the month of June, 1601 ; and it is further our will and pleasure that our said grantees have a remission of the said one-tenth part for five years from and after the date of these presents."

In accordance with the conditions of his patent, he had the district explored by Mr. Cunningham ; but unwilling to run the risk

of working himself, leased all his rights to the Chaudière Mining Company, in consideration of receiving an improved royalty, amounting, for the first portion of the leasehold term, to twenty-five per cent., and for the latter to thirty-three and a-half per cent. This arrangement not being found to answer, the improved royalty was bought up for a fixed sum. The company obtained also the right of working in the fief of La Barbe, through which the lower part of the Famine flows.

It began its operations on the Touffé de Pins, at a point about a mile from its mouth, where the river had gradually receded from its original bed, leaving behind it an extensive flat covered with eight or ten feet of *débris*. Here the company worked for several years, but so unskilfully and so lavishly that the receipts did not cover the expenditure. It is to be regretted that the first attempt should have been made under circumstances so little likely to prove successful, for the signal failure of the company helped to retard the progress of the mines. The Des Plantes was also worked in several places. At one spot, immediately above the first fall, a rich deposit was struck upon, which yielded, for several weeks, from three to ten ounces a day. Here also was tried the experiment of dry-digging. The deluvial deposit was washed from the hill-side far above the level of the brook, and, though not with such success as to encourage the company to proceed, yet with sufficient to prove the existence of so much diffused gold as would entitle any one to employ, with a confident hope of remuneration, some more rapid system of washing, such as the hydraulic process described by Mr. Hunt in the *Canadian Naturalist* of April last. This stream is peculiarly suited, likewise, for such an experiment, its bed being narrow and the enclosing hills steep, while a supply of water, with a head of seventy or eighty feet, may be had from a fall not half a mile distant from the old dry diggings.

It was on this stream and on the Famine that the company was working, when Lord Elgin visited the mines in 1853.

On the latter river but little was done, and that on so small a scale as not fairly to test its capabilities. As, however, it has

always been a favorite stream with the *habitants*, it must have produced a considerable quantity of gold.

In size the gold of the Famine resembles that of the Du Loup, being smaller than that of the Touffe de Pins, where again there is much less large gold than upon the Des Plantes. From the circumstance of its only being found in rapids, the gold of the main river is uniformly heavier than that of any of its tributaries; but if the flats were washed, they would probably be found impregnated with the finest dust.

While the Chaudière Mining Company was working within its limits, the Canada Mining Company obtained the right to wash for gold on the flats at the mouth of the Du Loup. Here it carried on extensive operations in the summers of 1851 and '52. Its works were superintended by an old Cornish miner, a Captain Otey, who adopted the system used in Cornwall for washing alluvial tin. As reported in the Geological Report for 1852, "The gravel for about three-eighths of an acre, with an average thickness of two feet, was washed and yielded 2,107 dwts. of gold, of which 160 were in the form of fine dust, mingled with about one ton of black iron sand, the heavy residue of the washing. The value of the gold was \$1,826, and the whole expenditure connected with the washing, \$1,643, leaving a profit of \$182.

"In 1852, above three-eighths of an acre were washed, and the total amount of gold obtained was 2,880 dwts., valued at \$2,496. Of this 307 were in the form of fine dust mixed with the iron sand. Nine of the nuggets found weighed together 468 dwts., the largest being about 127, and the smallest about 11 dwts. Small and unimportant portions of platinum and iridosmine were found. The washing lasted from the 24th May to October 30th, and the sum expended for labor was \$1,888, leaving a profit of \$608."*

Had the same amount of labour been as systematically and scientifically employed elsewhere, there is reason to think the result would have been more encouraging: for at the spot selected the gold is so fine and so widely scattered, that it would be impos-

* *Geology of Canada*, page 371.

sible to gain a moderate day's wages in panning, whereas in the more restricted channels of some of the smaller streams, panning is remunerative. The experiment is all the more valuable, however, on that very account.

The Canada Gold Mining Company was obliged to abandon its works on account of some disagreement with the proprietor of the land adjoining.

On the same spot the Napanee Company endeavored afterwards to sink a shaft through the slate, in the hope of finding beds of auriferous sand beneath, such as in California they believed to yield the richest returns; but after two years' boring, they abandoned their foolish attempt.

Since 1855, the diggings have been abandoned to the depredations of the *habitants*. It was their interest to conceal any success which attended their panning, lest tribute should be demanded of them. But as it requires more than an ordinary inducement to drag the *habitant* from his warm stove to work knee-deep in water all day long, few were tempted. The only men who have worked perseveringly are the Poulins. There are five brothers, all men brought up to a bush life, and better able, therefore, to endure the fatigues of gold-washing than their neighbors. They are not lacking in intelligence, and two, at least, are intensely avaricious—eminent qualifications for successful gold-seekers. It has always been as difficult to estimate their success as to catch them at work. Their fire might frequently be found burning, and the picks and shovels they had thrown down in their haste to escape, but never themselves. The difficulty of finding them was enhanced by their mode of operating. Opening a passage in the side of a bank not larger than would allow them to crawl in, they struck the ledge, and by degrees bored their way along its surface, clearing it of the subjacent gold without displaying the extent of their work. One of them, last summer, admitted having worked for years, but nothing more precise could be elicited than that he had at times "found very little, but at others a good deal." Another brother, when asked by the *curé* to give

the church gold to gild the high altar, replied he could give what would gild the whole church. Exaggerated reports have, no doubt, gone abroad of their wealth; but, nevertheless, they must have found more than the wretched manner in which they live would lead one to infer, for their good fortune has not in the least improved their outward condition. The gold being stolen, they were always fearful of doing anything which would disclose their success.

Yet, however much they may have found while scouring the river bed, they probably never struck on any such rich deposit as that which has created so unusual a fever throughout the province during the past summer. The spot is on the north branch of the river Gilbert, about four miles from its mouth. It was too late in the season, when the discovery was made, to do more than ascertain its exceeding richness, but so soon as the spring freshets had subsided, they betook themselves to work, and with such success, that the fame of their good fortune spread rapidly through the parish, and the most impassive of the *habitants* flocked to the locality. The river was explored for about a mile of its length, and two spots selected as the richest; one on the lot of a man called Veilleux, the other about fifteen acres lower down, on Rodrigue's land. The upper diggings attracted the greatest crowds, and up to the middle of July, Rodrigue himself and three of the Poulins, his associates, were undisturbed in their possession of the lower diggings. Within the six weeks—from the beginning of June till near the middle of July—several acres of ground in Veilleux's lot were thickly perforated with holes, and the bed of the river pretty thoroughly washed out. The bailiff, who was sent by Mr. De Léry to drive them off, took down the names of about seventy persons. Of these a large proportion were, perhaps, merely looking on; but, judging by the quantity of work got through, there must have been as many as fifty people, on an average, washing during the six weeks. Very few were willing to make returns, not so much, perhaps, through dishonesty, as because, when demanded, the gold was sold and the proceeds dis-

posed of. The largest piece found was said to have been picked up by a woman named Parré, and to have been sold for £22. One party of six, including the two most noted Poulins, acknowledged finding fifteen ounces in three days; and another party, of the same number of hands, found six and a half ounces in two days. After the unlicensed diggers were driven off, part of the location was thoroughly washed with ground sluices by Messrs. Parker, Hagens & Co., who have bought a continuation of the lease, under the superintendence of a Californian, Mr. Percival. The work might have paid, had not so much unproductive labor been expended in clearing away the ground already worked. Between the upper and lower diggings the stream is rapid, and flows often over a bare ledge, but is still bordered on the right by narrow alluvial flats (which, however, were not found to be sufficiently productive to be worked profitably with such appliances as were used last summer), and on the left by a steep ridge, which it is gradually cutting away. The lower diggings seem to have been caused by a bar of hard rock, which, crossing the stream almost at right angles, appears to have intercepted the gold in its downward progress; for below the bar nothing of any consequence has been found, while immediately above it the yield has been enormous. The soil became poorer as it receded upwards. It was just above the bar that Rodrigue and his company worked the bed of the river in the beginning of the season, and it was here they bought the location which has proved so rich. Up to the middle of July no work had been done upon the banks, the crowd being retained at the upper diggings, and the bed of the stream affording occupation enough to the four men who composed Rodrigue's party. They worked eleven full days, and found, with nothing better than tin pans, 10 lbs. of gold. And be it said to their credit, they were honest enough to admit it, and give a quarter in tribute.

The location which, after this, Rodrigue and his party bought was one hundred and fifty feet long by fifty feet wide. They selected a part to work themselves, and sold the rest piece-meal, at prices which must have brought them in several times what they paid

for the whole. Their find, after exhausting the bed of the river, somewhat fell off; but while washing the banks they got, for instance, one day 1 pound, and the following 10 ounces. But it must be remembered that this was with the assistance of a ground sluice, whereas previously they had used only a tin pan. Their largest piece was sold for \$200; the next largest weighed almost a quarter of a pound. What they found it all they did not know themselves, as they frequently sold parcels of gold without keeping accurate account of it; but the proceeds of the summer did not probably amount to less than 24 lbs., which would give 6 lbs. (worth \$129¢) to each man; or, supposing them to have worked eighty days, that is twenty days a month for four months, which is more than probably they did, their wages were per man over \$16 a day, and deducting tribute during the early part of the season and the price of location, say \$14. One day Rodrigue, working alone with an old man, panned 2 ounces 2 dwts. and 8 grains, worth \$38. Their success, however, must not be taken as the measure of others' fortune. None else were so lucky as they, and few of those who purchased locations higher up than Rodrigue's or further from the river, were repaid for the outlay and their time. This has been and always will be the fate of gold diggers. To reduce the average find to one dollar a day per man, which is Australian wages, sixteen men must find nothing to compensate for the good fortune of one such as Rodrigue.

The conditions under which the alluvial gold is found vary with the different character of the river beds. The Des Plantes, between the lower and upper falls, where alone any mining has been done, is narrow and precipitous; there is, therefore, but little depth of deposit upon the ledge, and that of a gravelly nature; hence the gold is found in largest quantity upon the ledge. The bed consists of a hard grauwaacke schist, dipping almost perpendicularly and interstratified by large dykes of serpentine. Above the second fall its character totally changes, and it runs sluggishly over a kind of plateau. This part has not been thoroughly ex-

plored. The Touffe de Pins is also rapid, but the valley through which it runs is seldom so narrow. Beds of clay alternate with those of gravel to the depth, sometimes, of eight and twelve feet; and a stiff clay, when lying immediately upon the slate, is often as rich throughout as where it rests upon the ledge. This was the case at several spots at the Rodrigue mine. The bed is composed of dark slate, very open in its cleavage. The Famire resembles generally the Touffe de Pins; but about a mile and a half above the falls, that is about five miles from its mouth, there commences an extensive deposit of clay, sand, and gravel. Sir W. Logan reports, in 1850-51, having "followed the section made through it by the river for about a mile and a-half, and constantly found the clay beneath and the gravel resting on it. Toward the top of the gravel, the bank often presented a horizontal deposit of mingled oxyde of iron and manganese, in some parts six and eight inches thick, filling the interstices among pebbles of various kinds. Gold is found in the underlying gravel as well as in the clay beneath; both of which deposits appear to belong to the modified drift." * A great quantity of gold is said to have been found this last summer about the head waters of the river. Gold occurs in the Metgermet, a tributary of the Du Loup, under the same curious condition as in the Famire. There the beds of stratified material attain a height of fifty feet above the bed of the river.

Where gold has been most extensively worked in the Du Loup, that is at its mouth, the deposit is composed of loose gravel, averaging not above two feet in thickness.

With regard to the quality of Chaudière alluvial gold: an assay of a sample made by Messrs. Thomas, Abell & Co. shows it to be $3\frac{1}{4}$ grains worse than standard, with 28 dwts. of silver per lb. But different samples vary greatly in their purity, according to the size of the gold and the locality whence it comes. The following results of assays by Mr. Hunt are given in the report of 1852-53, and are repeated in the General Report of the Geological Survey:—A small mass from St. Francis,

* Also, General Report, page 139.

Beauce, contained 13.27 per cent. of silver. The specific gravity of five worn fragments of gold from Rivière du Loup was as follows: 15.76,—16.49,—16.65—17.60,—17.77. The third specimen, after being hammered into a thin plate and annealed, had a specific gravity of 17.024, and gave 13.60 per cent. of silver. The fifth, after a similar treatment, acquired a specific gravity of 17.848, and gave 12.23 per cent. of silver. A third specimen, in fine scales, had a density of 16.57, and contained 10.76 per cent. of silver. It would seem from the variations in specific gravity, that these specimens of native gold were not homogeneous, but were cavernous, and held earthy impurities. An apparently pure fragment, weighing 7.5 grammes, had a specific gravity of 15.76; but by prolonged fusion with nitre and carbonate of soda, it lost 1.76 per cent. of its weight, and acquired a specific gravity of 17.43. In the assays above given the gold was precipitated by oxalic acid from its solutions, which contained, besides, only traces of copper and iron. The pure gold thus separated, after fusion with nitre, had a specific gravity of 18.68—19.94, as determined on two specimens.

A portion of the gold dust from the washings at the Rivière du Loup was subjected to amalgamation, and left one third of its weight of black ferruginous sand, of which eighteen per cent. were magnetic. The non-magnetic portion was rendered soluble by the successive action of hydrochloric acid and fused bisulphate of potash, leaving 4.8 per cent. of silicious residue. From the solutions which contained iron and chromium, ebullition threw down 23.15 per cent. of titanio acid. The liquid was examined without success for tin, uranium, cerium, and the rarer metals, which are sometimes found in the auriferous gravel of other regions. The gold obtained by the distillation of the amalgam lost 4.27 per cent. of its weight by fusion with borax, and the assay of the resulting ingot gave 12.87 per cent. of silver. This gold contained neither copper nor palladium, but a minute trace of platinum.”*

As much uncertainty must exist with regard to the source of the gold, as to the mode of its distribution. Till, in fact, the latter ques-

* General Report, page 520.

tion is satisfactorily settled, it would be unsafe to decide positively on the first. Sir W. Logan speaks cautiously, therefore, when he says:—"The source of the gold *appears* to be the crystalline schists of the Notre Dame range, and the materials derived from their disintegration not only constitute the superficial material among the hills of this range, but are spread over a considerable area to the south of them." In the report for 1852, Sir William attempts also to define the geological position of the auriferous drift: he supposes it to be of greater antiquity than the drifts occupying the valley of the St. Lawrence, which contains remains of the whale, seal and two species of fish. The highest point at which this drift occurs is in the Montreal mountain, at 470 feet above the sea level, whereas the lowest point of the surface of the Chaudière drift is 800 feet. No traces of organic remains have been discovered in the Chaudière drift.

Whether quartz be the original matrix of all gold or not, a good deal of the large gold on the Chaudière is found with more or less quartz adhering to it, and several specimens from placer-deposits are almost embedded in this rock: and that although no vein yielding such large gold has yet been opened. The same difficulties exist to some extent in accounting for the aquaeus distribution of the precious metal on the abrasian theory here as elsewhere. Yet the agency of water in accumulating the gold at all those spots where an unusual quantity has been found is very apparent. At the top of the Des Plantes fall, and at Rodrigue's location, a high ledge of harder rock than the slate which it intersects crosses the river, forming just such a barrier against the action of the water upon gold, as is the bar in the cradle or the tie.

But though no very productive gold-bearing vein has been opened, it is true that in several of the many veins which cut the slate, specks of visible gold have been discovered, and in a few instances, very pretty specimens have been taken out; and when all the veins have been tested, it will doubtless be found that many are auriferous; perhaps so richly charged, though nothing is now

visible to the eye but the mass of milky stone, that they can be worked with advantage.

On the river Guillaume, gold is found associated in small quantities with white garnet rock. An auriferous vein crosses the Des Plantes a little below the first fall, from which specimens of visible gold were taken several years ago. Another well-defined vein cuts the slates near the head of the Great Rapid, where visible gold occurs, associated with rich argentiferous galena, sulphuret of zinc and iron, and arsenical pyrites; and about fifty yards above this, a thin vein not six inches wide, has yielded very beautiful specimens of the precious metal. No properly-directed attempts have been made to ascertain their value; for though a good deal of work was done upon the large vein at the head of the Rapids, the object kept in view was the finding of visible gold only. Several assays have been made of its contents, which show gold to be disseminated through it; but no large quantity has been crushed and treated with mercury, so as to ascertain its general richness. Mr. Hunt reports it to contain "argentiferous galena, blende, mispeckle, besides cubic and magnetic pyrites, with minute grains of native gold. A portion of galena from the assorted and washed ore, which still retained an admixture of blende and pyrites, gave by assay 69 per cent. of lead and 32 ounces of silver to the ton of ore. Another sample of galena, more carefully dressed, gave at the rate of 37 ounces of silver. The button of silver obtained by cupellation from this lead contained a small but appreciable quantity of gold. The assay of a second portion of the sample of ore, which yielded 69 per cent. of lead, afforded by cupellation a quantity of silver equal to not less than 256 ounces of silver to the ton. This result was probably due to the presence of a fragment of native silver, or some rich silver ore among the dressed galena; inasmuch as a third assay, of another portion of the ore, more carefully dressed than the first, yielded 37 ounces of silver to the ton. The silver from the cupellation of the reduced lead contained a little gold, and both silver and gold were obtained from the blende and pyrites of the same vein. 1000 grs. of the

pyrites, still mingled with a small portion of the other ores, were roasted, and then fused with litharge, borax, salt of tartar and metallic iron. The resulting button of lead gave by cupellation, 0.15 grs. of an alloy of gold and silver. 700 grs. of the blende, treated in the same manner, gave 0.19 grs. of a similar alloy of a pale yellow colour. The two precious metals seem thus to be generally disseminated throughout the ores of this vein."*

There can be little doubt, from the known presence of gold in some veins, of its existence in most. Dr. Anderson obtained gold from a small fragment chipped off a quartz boulder at St. Mary. The success which has attended quartz crushing in Nova Scotia will probably give an immediate impulse to that branch of gold mining here, and we may, therefore, expect that during the coming summer the contents of some of the countless veins, with which the face of the whole region is reticulated, will be exposed. Should they prove to be as richly charged with gold as those of the Lower Province, the discovery will most likely result in the general abandonment of alluvial diggings in favor of that more constant and certain source of profit.

The gold-bearing veins appear among rocks of both the Upper and Lower Silurian groups, which merge gradually into one another in the midst of the gold regions of the Chaudière—the Quebec group giving place to Upper Silurian slates between the Guillaume and St. François church. The geological features of the Chaudière are described in the recent report of the geological survey, page 427, condensed from the annual report of 1849-'50.

But gold is not confined to the Chaudière valley. It will, probably, be found over the whole extent of the Quebec group of rocks, which stretches, with certain undulations, from Missisquoi Bay to Newfoundland. A specimen, weighing several dwts. was brought up lately from Trois Saumons; and gold is found in the Magog and St. Francis rivers, and in streams in Westbury, Weedon, Ascot and Dudswell, and on Lake St. Francis. As already stated, gold was long ago detected in a copper-bearing vein in Ascot, near Sherbrooke;

* Geological Report for the year 1853, and General Report, page 517.

and very beautiful specimens, weighing several pennyweights, have been taken from a vein of bitter spar on lot No. 14, 14th range, in Leeds, near Harvey Hill, which carries likewise copper-glance and specular iron ore. The same measure is supposed by Mr. Herbert Williams, the mining superintendent of the English and Canadian Mining Company, to crop out in the Handkerchief Peak, St. Sylvester, the property of the Chaudière Copper Mining Company, where the prospects of gold are favourable.

It is yet an open question whether, after all, the Canadian gold fields are to be a source of wealth to the province, or only a subject of curious enquiry to the geologist and mineralogist. For nearly twenty years it has been a well-known fact that gold exists, in considerable quantities, within fifty miles of our city, and with the object of finding it the auriferous region has been over and over again explored. But had not the fortunate discovery of a single rich deposit created an unwonted excitement, they might have remained as long again of as little general interest as the gold mines of Transylvania or the Ural Mountains. That Canada is another California is more than improbable; that its alluvial diggings will become as famous as those of Virginia and the Carolinas, is possible. In Virginia, as much as \$10,000 has been taken from a spot twenty-five feet square. Nothing yet done here can compare with that. The gold mines of the Southern States sent annually to the United States mint one million dollars of gold.

As there will, probably be a rush to the Chaudière next summer and Rodrigue's mines being well-nigh exhausted, the crowd will be driven to search elsewhere, the question may be solved. Next summer, in all likelihood, the quartz mines will also be fully tested, and we shall be able to draw comparisons with Nova Scotia. There is perhaps hardly identity enough between the Nova Scotian gold bearing group and the Quebec group to excite any very sanguine expectations. It is, however, a hopeful sign that there is some affinity between the rock at Cape Canseau and the upper slates which are intersected by some of the quartz veins of the Chaudière.

Unless the quartz veins do prove productive, the gold will hardly ever become directly a source of revenue to the province, owing to the extreme difficulty there will be found of enforcing any system of licences. To keep on foot a body of police and officials, numerous enough to watch so wide a district, covered over almost its whole extent by dense forests, would cost a hundred fold more than the sale of licenses would ever bring in. And the same difficulty would attend the sale of locations. Once, however, quartz crushing-mills are established, a royalty may be levied without any expense to government, and with as little dissatisfaction as the tax has excited in Nova Scotia. Should the gold fields not prove rich enough to attract single-handed labour, but should capitalists deem it worth while to work on a large scale, the case would, of course, be different.

hardly
owing
y sys-
cials,
lmost
more
diffi-
uartz
t any
e tax
rich
deem
urse,